CLAIMS

1. A method of performance monitoring in a communications network, comprising;

monitoring a signal over time by allocating a current signal quality characterization to the signal, selected from at least two such signal quality characterizations;

identifying a plurality of time intervals making up a continuous succession of such time intervals, such that a current time interval is terminated and a next time interval is initiated each time the signal quality characterization allocated to the signal changes; and

generating a record of each identified time interval.

2. A method according to claim 1 additionally comprising generating a performance log using the records.

3. A method according to claim 1 wherein the signal quality characterizations comprise at least one of the following:

Perfect Time Interval (PT), which is allocated to the signal where no errors are detected on the signal;

Errored Time Interval, which is allocated to the signal where errors are detected on the signal in a unit time in insufficient numbers to make a service carried by the signal unavailable;

Severely Errored Time Interval, which is allocated to the signal where errors are detected on the signal in a unit time in sufficient numbers to make a service carried by the signal unavailable;

Unavailable Time Interval (UAT), which is allocated to the signal where a service carried by the signal is unavailable; and

Poor Time Interval (PrT), which is allocated to the signal where a sequence of at least two of the above characterizations are detected on the signal.

4. A method according to claim 1 wherein monitoring occurs over successive log periods and the method comprises generating a performance log using the records for each log period.

5. A method according to claim 1 wherein the record for each interval comprises at least the length of the interval and the signal quality characterization allocated for the interval.

6. A method according to claim 1 comprising generating a performance log made up of records stored in accordance with the succession of time intervals.

7. A method according to claim 1 comprising generating a performance log by manipulating selected records to reduce the amount of memory required to store the records while intelligently degrading their accuracy.

8. A method according to claim 1 additionally comprising selecting sets of records corresponding to continuous successions of time intervals, and merging the selected sets to form a merged record.

9. A method according to claim 1 additionally comprising:

designating some records as primary records and others as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record.

10. A method according to claim 1 additionally comprising:

designating records as primary records if they fall within one or more sets of the longest records having a selected quality characterization and designating other records as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record.

11. A method according to claim 1 additionally comprising:

designating some records as primary records and others as secondary records;

selecting sequences of secondary records corresponding to continuous successions of time intervals which are located between two primary records; and

merging the selected sets to form a merged record.

12. A method according to claim 1 additionally comprising:

designating some records as primary records and others as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record;

wherein secondary records are designated as such according to one or more of the following:

records representing the shortest intervals of time; and

records corresponding to the highest densities of continuous successions of time intervals.

13. A method according to claim 1 additionally comprising monitoring the amount of memory required to store the records, and when the amount of memory reaches a predetermined limit, selecting sets of records corresponding to continuous successions of time intervals, and merging the selected sets to form a merged record so as to reduce the amount of memory required to store the records.

14. A method according to claim 1 additionally comprising:

designating some records as primary records and others as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals;

merging the selected sets to form a merged record; and

storing primary records, unmerged secondary records and merged records in a performance log according to the succession of their associated time intervals.

15. A method according to claim 1 additionally comprising merging selected records to form a merged record with a quality characterization of poor time and a duration equal to the sum of the duration of the intervals associated with the merged records.

16. A method according to claim 1 additionally comprising selecting a set of records corresponding to a continuous succession of time intervals and merging the selected set to form a merged record provided the memory required to store the merged record is less than the memory required to store the selected set of records.

17. Computer executable software code stored on a computer readable medium for making a computer execute the method of claim 1.

18. A programmed computer, which stores computer executable program code for making the computer execute the method of claim 1.

19. A computer readable medium having computer executable software code stored thereon, which code is for making a computer execute the method of claim 1.

20. A processor for carrying out performance monitoring in a communications network and for carrying out the following instructions;

monitor a signal over time by allocating a current signal quality characterization to the signal, selected from at least two such signal quality characterizations;

identify a plurality of time intervals making up a continuous succession of such time intervals, such that a current time interval is terminated and a next time interval is initiated each time the signal quality characterization allocated to the signal changes; and

generate a record of each identified time interval.

21. A processor according to claim 20 which is located in a network element of the communications network.

22. A processor according to claim 20 for monitoring a communications path and which is located in a network element of the communications network, which network element terminates the communications path.

23. A processor according to claim 20 additionally configured for generating a performance log in a memory using the records.

24. A processor according to claim 20 wherein the signal quality characterizations comprise at least one of the following:

Perfect Time Interval (PT), which is allocated to the signal where no errors are detected on the signal;

Errored Time Interval, which is allocated to the signal where errors are detected on the signal in a unit time in insufficient numbers to make a service carried by the signal unavailable;

Severely Errored Time Interval, which is allocated to the signal where errors are detected on the signal in a unit time in sufficient numbers to make a service carried by the signal unavailable;

Unavailable Time Interval (UAT), which is allocated to the signal where a service carried by the signal is unavailable; and

Poor Time Interval (PrT), which is allocated to the signal where a sequence of at least two of the above characterizations are detected on the signal.

25. A processor according to claim 20 configured for monitoring the signal over successive log periods and for generating a performance log using the records for each log period.

26. A processor according to claim 20 configured for generating a record for each interval which comprises at least the length of the interval and the signal quality characterization allocated for the interval.

27. A processor according to claim 20 configured for generating a performance log made up of records stored in accordance with the succession of time intervals.

28. A processor according to claim 20 configured for generating a performance log by manipulating selected records to reduce the amount of memory required to store the records while intelligently degrading their accuracy.

29. A processor according to claim 20 configured for selecting sets of records corresponding to continuous successions of time intervals, and merging the selected sets to form a merged record.

30. A processor according to claim 20 additionally configured for carrying out the following:

designating some records as primary records and others as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record.

31. A processor according to claim 20 additionally configured for carrying out the following:

designating records as primary records if they fall within one or more sets of the longest records having a selected quality characterization and designating other records as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record.

32. A processor according to claim 20 additionally configured for carrying out the following:

designating some records as primary records and others as secondary records;

selecting sequences of secondary records corresponding to continuous successions of time intervals which are located between two primary records; and

merging the selected sets to form a merged record.

33. A processor according to claim 20 additionally configured for carrying out the following:

designating some records as primary records and others as secondary records;

selecting sets of secondary records corresponding to continuous successions of time intervals; and

merging the selected sets to form a merged record;

wherein secondary records are designated as such according to one or more of the following:

records representing the shortest intervals of time; and

records corresponding to the highest densities of continuous successions of time intervals.

34. A processor according to claim 20 additionally configured for monitoring the amount of memory required to store the records, and when the amount of memory reaches a predetermined limit, selecting sets of records corresponding to continuous successions of time intervals, and merging the selected sets to form a merged record so as to reduce the amount of memory required to store the records.

35. A processor according to claim 20 additionally configured for merging selected records to form a merged record with a quality characterization of poor time and a duration equal to the sum of the duration of the intervals associated with the merged records.

36. Control logic configured for carrying out performance monitoring in a communications network and for carrying out the following instructions;

monitor a signal over time by allocating a current signal quality characterization to the signal, selected from at least two such signal quality characterizations;

identify a plurality of time intervals making up a continuous succession of such time intervals, such that a current time interval is terminated and a next time interval is initiated each time the signal quality characterization allocated to the signal changes; and

generate a record of each identified time interval.

37. Control logic according to claim 36 which is located in a network element of the communications network.

38. Control logic according to claim 36 for monitoring a communications path and which is located in a network element of the communications network, which network element terminates the communications path.

39. A network element for carrying out performance monitoring in a communications network comprising;

processing means for monitoring a signal over time by allocating a current signal quality characterization to the

signal, selected from at least two such signal quality characterizations; and

processing means for identifying a plurality of time intervals making up a continuous succession of such time intervals, such that a current time interval is terminated and a next time interval is initiated each time the signal quality characterization allocated to the signal changes; and

processing means for generating a record of each identified time interval.

40. A network element according to claim 39 for monitoring a communications path, which network element terminates the communications path.